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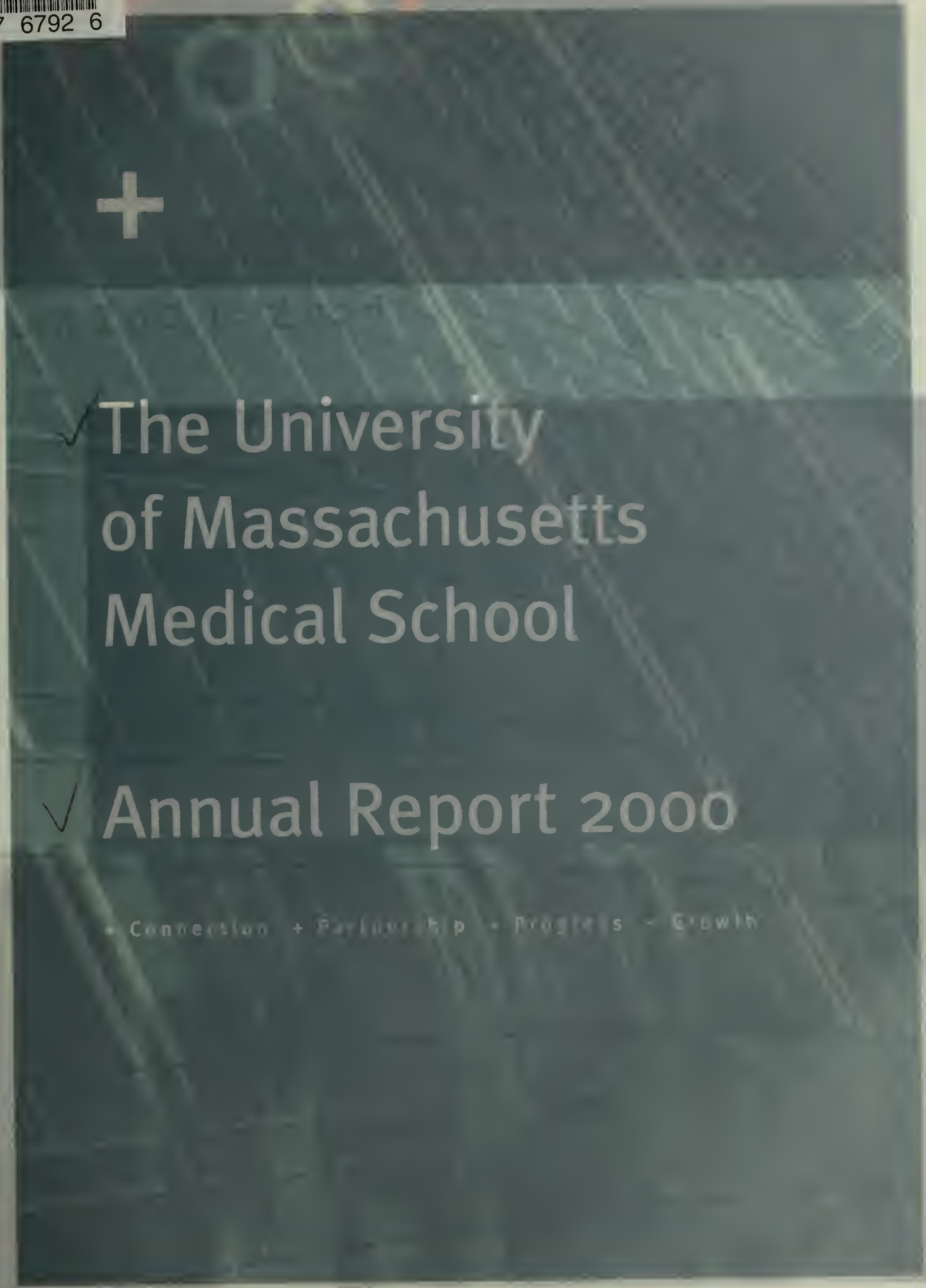

The University of Massachusetts Medical School

Annual Report 2000

+ Connection + Partnership + Progress + Growth

Vitae:

The University of Massachusetts Medical School annual report for the year 2000

Vol. 23 No. 2

MASS. UM 200.1: 2000

The University of Massachusetts Medical School

SCHOOL OF MEDICINE, opened in 1970
GRADUATE SCHOOL OF BIOMEDICAL SCIENCES, opened in 1979
GRADUATE SCHOOL OF NURSING, opened in 1986

Annual Report 2000

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A MESSAGE FROM THE CHANCELLOR/DEAN

As we begin the new millennium, and I my second decade as chancellor/dean, I am reminded of the many changes we have seen in the past 10 years. We together have much to celebrate. So much of what has been accomplished is the result of the unconditional commitment to our mission of education, research and public service, and the willingness to think creatively and encourage new ideas in all that we do. Our goal of national distinction in the health sciences is rooted in our dedication to our mission of serving the betterment of humanity.

These goals, these aspirations, become reality in large and small ways each and every year here at UMMS. And, in the year just past, our mission of achieving distinction in education, research and public service again reached a new high. The pages of this annual report chart this trajectory to excellence—the Macy Initiative, which highlights our innovative curriculum; the exciting and renowned researchers we continue to recruit to UMMS; the new research laboratory building nearing completion, and the growth of our research enterprise to over $100 million; 10 years of outreach to underserved populations who go on to benefit the commonwealth through careers in the health professions; research and teaching that reaches new parts of the community and different parts of the world.

Since 1990, we have revamped medical education, enhanced the curriculum in the Graduate School of Biomedical Sciences, developed an outstanding PhD program in nursing and recruited an outstanding new dean, Doreen Harper. We centralized research leadership and instituted an advisory committee structure that has led us to unprecedented research growth. The enormous success of Commonwealth Medicine, a unique medical school activity, has further connected us in the most positive of ways to state government: 10 state agencies depend on UMMS for expertise and support. Our activities in the community, the region, and around the world enhance health and health sciences education and give new life to the concept of public service. And most inspiring of all, there is at UMMS a continued willingness to work together to do more.

The coming decade will be full of challenges and opportunities, for we live in exciting and rapidly changing times. I believe all of us consider it a privilege to work here, and I offer my millennial best wishes to all those who have been a part of this enterprise for all you have accomplished.

Aaron Lazare, MD

N. LYNN ECKHERT, MD, DRPH, WITH MASSACHUSETTS CONGRESSMEN JOSEPH MOAKLEY AND JAMES P. MCGOVERN

> *"[Cuban] Doctors have a very close relationship with their communities," Eckhert explained. "They live amidst their patients, care for 150 to 180 families and emphasize prevention through home visits and health education."*

PHOTOGRAPHS COURTESY OF N. LYNN ECKHERT

The Education Connection

BY ALLISON CHISHOLM

It takes less than an hour to fly over the 90 miles of water between U.S. territory and Cuba. But for most Americans, Cuba—under U.S. embargo since its Communist revolution in 1959—might as well be 9,000 miles away. N. Lynn Eckhert, MD, DrPH, dean of the University of Massachusetts Medical School Center for International Health, wants to shrink that distance, looking beyond political differences to basic concerns shared by both nations—health care and medical education.

Dr. Eckhert traveled to Cuba twice during 2000. The first trip, sponsored by Medical Education Cooperation with Cuba (MEDICC), brought nine deans and faculty members from six American medical schools to review elective opportunities for medical students and residents in Cuban medical schools and "polyclinics," where a doctor and nurse team work closely within a community.

Her group visited what Eckhert calls "an extraordinary experiment": the Latin American School of Medicine. In response to the devastation of Hurricanes Georges and Mitch, the Cuban government converted a former naval academy into a medical school for 5,000 full-scholarship students from Latin American and Caribbean nations. The first class of 1,929 came to Cuba and began studies in February. After completing the six-year program (the standard length of medical training in Cuba), students are expected to return to their countries and work in impoverished or isolated areas.

Eckhert's second trip, only two months later, was quite different. Part of a delegation of 50 college deans and presidents, including UMass' William M. Bulger, and Massachusetts congressional representatives James P. McGovern and Joseph Moakley, Eckhert was one of only two physicians this time. Asked by Chancellor and Dean Aaron Lazare to join the group, Eckhert said, "I was eager to go back. I wanted to reinforce our connections and see how health care interrelated with the overall Cuban agenda."

When Fidel Castro took power in 1959, Cuba had about 6,000 physicians. Fully half fled the island, leaving the country with diminished medical resources. Castro's new system created the universal right to free, accessible health care. A network of more than 400 public polyclinics emerged, emphasizing community education and preventive services. Medical education curriculum took on a primary care orientation in the 1970s. Cuba now has one of the world's highest physician per capita ratios with a population of 11 million people and more than 63,000 physicians, almost half of them family physicians, and about 60 percent women. Some 3,000 physicians work overseas each year. The Cuban government has even offered to send doctors to underserved areas of the U.S.

The government focus on health care has produced a nation with infant mortality and low birth weight incidences comparable to the U.S., and life expectancies averaging 76.

"How can a country so poor achieve such good outcomes?" asked UMass Memorial physicians who attended Eckhert's grand rounds on her Cuba experiences. "Doctors have a very close relationship with their communities," Eckhert explained. "They live amidst their patients, care for 150 to 180 families and emphasize prevention through home visits and health education." Cuban physicians teach the elderly how to cook nutritious, cost-effective meals, while others are assigned to ensure the health of those in specific industries.

Connections are one result of Eckhert's travels, and "UMass can help make connections," she said. Cubans are eager for more UMMS students to come to their country, either for a summer after their first year, or for a fourth-year elective in family medicine or reproductive health. Faculty are also welcome.

"The researchers at the Carlos Finlay Institute want to share with their American colleagues, especially their work on the first meningococcal B vaccines," Eckhert noted. A recent decision by the U.S. Treasury Department authorized clinical trials of this vaccine in the U.S.

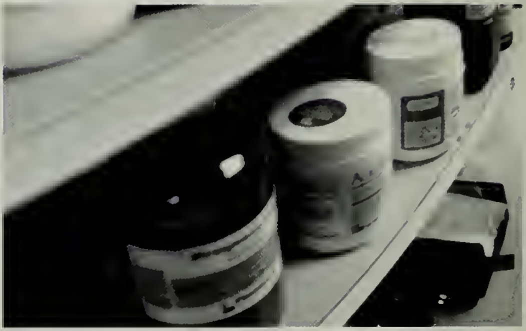
"As dialogue increases across the Gulf of Mexico," Eckhert said, "the prospects are very exciting." +

JERRY H. GURWITZ, MD

TERRY FIELD, DSC

"Mistakes are a fact of life. It's the response to the error that counts."

Nikki Giovanni (Amer. poet 1943 –)



Partners in Patient Safety

BY LYNN C. BORELLA

Focusing on the response to a medical error, rather than on the mistake of an individual, has been the objective of a group of UMass Medical School faculty since the mid-1990s, years before the recent publication of "To Err is Human," a report from the Institute of Medicine's (IOM) Quality of Health Care in America Committee. The widespread reaction to the report's findings—that medical errors represent the eighth leading cause of death in the United States—and the IOM's recommendation that the number of deaths be cut in half by 2005 resounded within the Meyers Primary Care Institute (MPCI), a research and educational partnership between UMMS and the Fallon Foundation. Since 1996, members of the MPCI have been striving to improve overall patient safety by conducting relevant research studies in the senior population.

According to Jerry H. Gurwitz, MD, the Dr. John Meyers Professor of Primary Care Medicine at UMMS and the Meyers Institute's executive director, "The goal of our research, as well as that of the national movement, is to focus less on individual blame and more on system-wide procedures that promote safe health care for all. Because of the collaboration fostered by the Meyers Primary Care Institute, the Medical School has the opportunity to position itself as a key player in this revolution."

From the day they moved into their offices on Central Street in Worcester, Dr. Gurwitz and Assistant Professor of Medicine Terry Field, DSc, have used their combined expertise in geriatrics and Gurwitz's past research success regarding drug safety to garner funding for three separate projects that address medication-related errors among the elderly. "Seniors use more drugs than the population as a whole and some of them take many on a daily basis," explained Dr. Field. "Combine this with the fact that this group is very susceptible to injury, and we begin to see more and more medication-related issues coming to the fore for seniors."

The MPCI's first undertaking, published in the August edition of the *American Journal of Medicine*, focused on the incidence of medication-related injuries and adverse drug events in nursing homes. The largest work of its kind to date, the study concluded that the majority of errors that occur in this setting happen because of inadequate monitoring or prescribing of drugs for the nursing home residents.

In July 2000, the MPCI began translating the recommendations from this first study into practice after receipt of its third grant from the Agency for Healthcare Research and Quality. Gurwitz and Field are now implementing a computerized physician ordering system at Baycrest Centre for Geriatric Care in Toronto and Masonicare in Wallingford, Connecticut, two large long-term care facilities. The system alerts prescribers of medications to potential problems patients may face based on their health history, such as excessive doses and allergies to medications, or the threat of a dangerous drug interaction. The system can also cue health care providers to monitor certain patients closely for early signs of adverse drug events.

"We're interested in intervening and educating health care providers at the time a drug is ordered," Gurwitz said. "If we prove physician order entry works in these model facilities, it might lead to health care policy changes that would encourage widespread use of this technology in all U.S. nursing homes."

Similar to the nursing home study and the subsequent implementation of the computerized ordering system, the MPCI's second grant aims to improve drug safety among seniors in the ambulatory care setting. Nearing completion, the two-year project specifically monitors adverse drug events culled from computerized drug use data and physician reports from the nearly 20,000 seniors enrolled in Fallon Community Health Plan's Senior Plan.

"No one has ever taken such a large patient population and tracked this kind of data over time," Gurwitz said. "By conducting this study, Fallon and UMass are demonstrating a continuing commitment to quality by maximizing the benefit of drug therapy to seniors while minimizing risk. The fact that Fallon is proactively collaborating with the Medical School as part of its own program positions the health care plan as not only a leader in quality health care, but also a leader in the patient safety arena."

LAURIE WALTER, UMMS 3RD YEAR

Post-Baccalaureate Program alumna; represents first generation in family to graduate from college

THEOFILOS MATHEOS, UMMS 1ST YEAR

Post-Baccalaureate Program alumnus

> *"Each pearl [program] is a unique and individually beautiful jewel that, when strung together, makes a priceless and even more beautiful whole."*
>
> **DEBORAH HARMON HINES, PHD**

MEERA GROVER, UMMS 1ST YEAR

Summer Research Fellowship Program

TIMOTHY VEAL, CLARK '99

Applying for '02 medical school admission;
High School Health Careers Program; Summer Enrichment Program;
Summer Research Fellowship Program

NICOLETTE FONTAINE, MD, UMMS '98

Internal medicine resident at UMass Memorial;
ABC Workshop on Minority Student Admissions;
Summer Research Fellowship Program

A Seamless 'Pipeline' to Success

BY SANDRA L. GRAY

Why would a medical school reach out to engage youth from disadvantaged backgrounds, to encourage them to set their sights higher, to strive for achievement? The goal is practical: to get students more representative of the commonwealth's diverse population into academic programs at UMass Medical School, who will then go on to better serve all of the people of the state and fuel its economy as highly-trained health care professionals.

The formula for success is equally practical: help prepare young people for college utilizing academic knowledge, critical thinking skills and positive role models. The Office of School Services' pre-matriculation programs help get and keep youth in the Medical School's "pipeline" with structured classroom and work experiences. The year 2000 marked the 10th anniversary of the expanded pre-matriculation enterprise, which has grown under the leadership of Deborah Harmon Hines, PhD, from a few programs to a full array, supported in part through grants totaling $2 million annually. Dr. Hines, professor of cell biology and associate vice chancellor for School Services, is proud of the programs' success stories and grateful for the visionary, sustained institutional support that has nurtured them.

When Hines joined UMMS to increase minority recruitment and retention as associate dean for Minority Affairs, her first challenge was to expand and enhance the pre-matriculation programs already in place: the High School Health Careers Program, the Summer Enrichment Program for college undergraduates, and the Post-Baccalaureate and Summer Research Programs for minority students.

"The point of the programs was to plug up holes in the 'leaky pipeline' for disadvantaged students," said Hines. She quickly recognized that young people are often disadvantaged because of economic and educational limitations, as well as race or ethnicity.

With encouragement from Chancellor and Dean Aaron Lazare to be creative, Hines stretched the criteria for outreach programs to include not only minority youth, but youth from families who fall below the federal guidelines for poverty, and youth of the first generation in their families to attend college—perhaps even the first to graduate from high school. New programs were added, and today Hines compares them to a string of pearls: "Each pearl [program] is a unique and individually beautiful jewel that, when strung together, makes a priceless and even more beautiful whole."

Program successes bear witness:

+ Since the advent of Worcester Pipeline Collaborative's Health Sciences Academy for middle and high school students, the Worcester Public Schools' North Quadrant, with the highest enrollment of minority students and formerly lowest standardized test scores in the city, now has steadily rising test scores, boasts double the number of honors students it had five years ago and has received recognition for performance on national standardized examinations.

+ The Regional Science Resource Center's Teacher Professional Development Program and "Science to Go" program, launched in Worcester, are now contracted for by school districts statewide.

+ NIH funding of the Summer Research Fellowship Program has grown from $3,000 in 1990 to $90,000 in 2000, bringing in 20-25 minority students annually (potential applicants for the Graduate School of Biomedical Sciences) from over 100 applicants nationwide.

+ Two-thirds of the participants in the Post-Baccalaureate Program have been subsequently accepted into medical school.

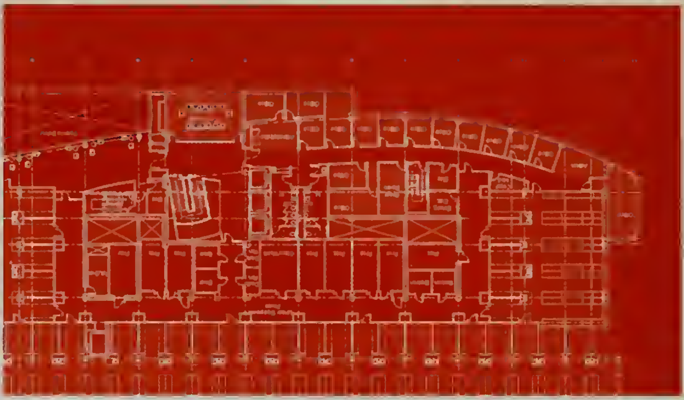
+ Through the Office of Science Education, UMMS is the first and only medical school in Massachusetts to provide direct input to the State Curriculum Frameworks for K-12 math and science.

The message for Massachusetts' disadvantaged youth, according to Hines: "No matter where you come from, this is where you're supposed to be." Students who go into the pipeline can and do come out the far end as academically prepared, dedicated, and invested students and professionals. They are the ultimate proof that educational outreach before, during and even after college, makes a difference. +

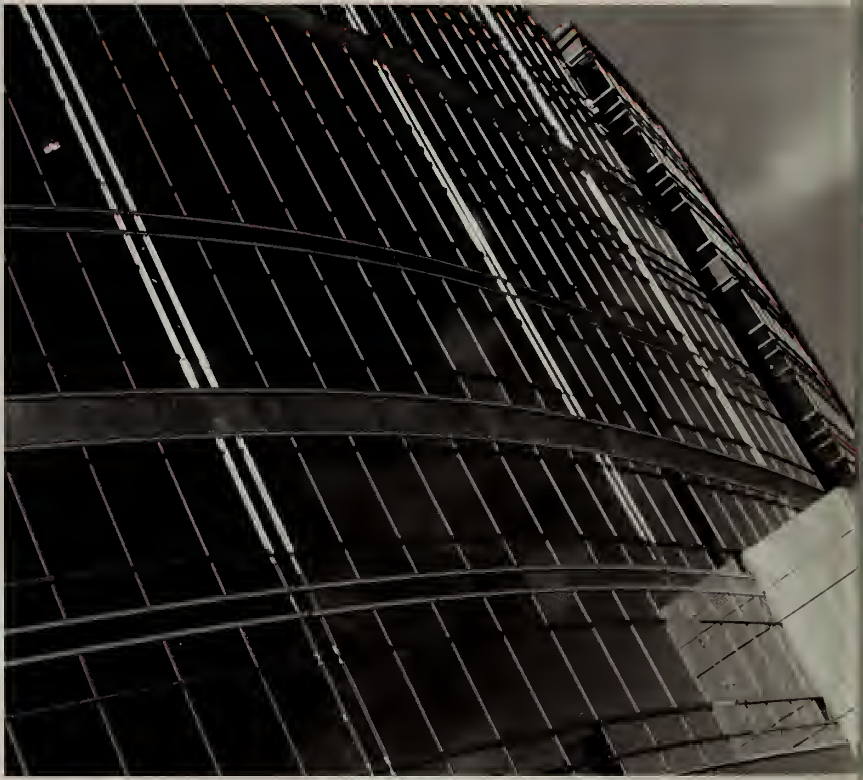
MIGUEL RODRIGUEZ, UMMS 4TH YEAR

High School Health Careers Program;
Summer Enrichment Program

FLOOR PLAN IMAGE © TSOI/KOBUS & ASSOCIATES



THE FLOOR PLAN IS AS INNOVATIVE AS IT WILL BE EFFICIENT.



THE VIEW DURING CONSTRUCTION OF THE LAB SPACE (TOP) AND THE OFFICE VIEWS (BOTTOM): BOTH ARE DESIGNED WITH THE SCIENTIST IN MIND.

MULTI-FLOOR ATRIA WILL HELP CREATE "RESEARCH NEIGHBORHOODS."

Research by Design

BY ANDREA L. BADRIGIAN

"Race Track," "Ghost Corridor," "Linear Equipment Room," "Clustered Office." At first blush, these phrases sound like a cross between a sporting event and "frightening" architecture. But they do have something in common. Each vied for the top spot as the design concept for efficiently organizing laboratory space within UMass Medical School's new research laboratory building. The winning design was determined through a combination of "virtual tours" of peer institutions and the knowledge of researchers with years of experience in the lab—simply put, understanding what works and what doesn't.

At this stage in construction, the research laboratory building's abundant windows reflect the winter sun and the future of UMMS' research enterprise. At the close of 2000, construction crews painstakingly placed the last pane of glass to protect the building's interior from the ice and snow. Within the approximately 200,000-square-foot space set aside for bench work, crews will work through late summer to bring tangible definition in steel and stone to the laboratory design selected in a process characterized by its own particular form of research.

The search for the ideal lab concept began with the formation by UMMS of a Research Advisory Group for the project's architects, engineers and lab planners, GPR Planners Collaborative of Purchase, New York. Faculty-scientists from 12 Medical School departments—with input from many levels of the Medical School administration, including Chancellor and Dean Aaron Lazare and Vice Chancellor for Operations Thomas Manning and his facilities staff—formed a lab planning team charged with determining concept selection and lab module development.

The first meeting of the team helped define its prime objective. According to team member Gary S. Stein, PhD, the Gerald L. Haidak, MD, and Zelda S. Haidak Distinguished Professor and chair of Cell Biology, that objective was "to design a state-of-the-art research facility that would support 'science without walls'—one that would facilitate collaboration between basic scientists and physician investigators to translate fundamental regulatory mechanisms into the diagnosis and treatment of disease."

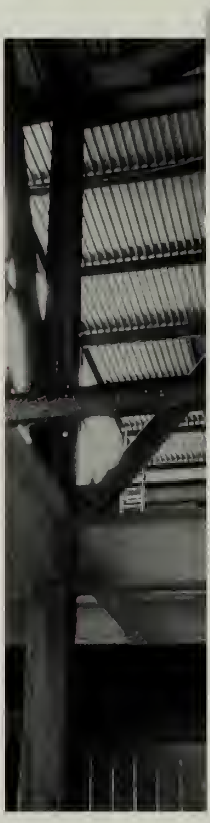
The team embarked on computer-based "virtual" tours of laboratory buildings at MIT's Whitehead Institute, the Ross Research Building at Johns Hopkins and UPenn's Biomedical Research Building II, among others. Thorough review of the structures, which were proposed, under construction or already built at the time, helped establish a benchmark of relevant lab design the team could draw upon when the moment of decision arrived.

GPR then presented to the team diagrams of basic design concepts for organizing lab, lab support and office/amenity space the members had seen on their virtual tours. "The concepts employ perimeter labs and offices with internal lab support, thus taking maximum advantage of natural light and view," explained Robert Lubalin of GPR. "They also support larger and more open lab environments to facilitate interaction and space assignment."

The team weighed the pros and cons of the Race Track Corridor (labs can be subdivided or expanded as needed; dual corridors reduce informal researcher interactions); the Ghost Corridor (successfully employed in many buildings with high space efficiencies; inherent space assignment issues due to two lab classes); the Clustered Office (offices interrupt large labs to minimize the distance between them; lab blocks can have restricted access if egress issues aren't properly addressed); and, the Linear Equipment Room.

"The team selected the Linear Equipment Room as its preferred concept because it provides a high efficiency floor plan while still permitting the ability to subdivide lab space where necessary," explained Lubalin. "This design addresses the need for light, view, interaction, space assignability and equipment sharing. It provides ease of access for maintenance of laboratory mechanical system components because an equipment room is located between the lab and lab support zone."

"The design of the laboratories within the new research building is sufficiently flexible to accommodate existing disciplines and experimental approaches, as well as those that are emerging," noted Dr. Stein. "Consequently, the facility is by no means 'dated.' Rather, this laboratory building will serve us well in the pursuit of the next generation of biomedical research challenges." +



The Year in Review : 2000

HARPER APPOINTED DEAN OF GSN

The nationwide search for a new dean of the Graduate School of Nursing concluded with the appointment of Doreen Harper, PhD, CS, ANP, FAAN, who replaces Lillian Goodman, EdD, dean *emerita*. Dr. Harper's experience includes faculty and academic administrative appointments at George Mason University, George Washington University and the University of Maryland; national leadership positions in organizations such as the American Academy of Nursing and the National Organization of Nurse Practitioner Faculties; and clinical practice and volunteer work with underserved patients and communities. Harper is the national coordinator for the W. K. Kellogg Foundation's Community Partnerships in Graduate Medical and Nursing Education Initiative, a network of projects in six academic health centers and more than 33 clinical sites designed to educate and train health care practitioners providing primary care for vulnerable populations. At UMMS, Harper is focusing on education, practice and research in pursuit of her goals of advancing the GSN to the top 50 percent of graduate schools of nursing in the country by 2005.

DOREEN HARPER, PHD, CS, ANP, FAAN

MICHELE P. PUGNAIRE, MD

UMMS SHOWCASED AT AAMC MEETING

Selected through a blind, peer-reviewed decision-making process, UMMS faculty presented the 111th annual meeting of the Association of American Medical Colleges (AAMC) with two workshops, one paper, one oral abstract and six posters, the highest aggregate number of presentations of any school in all three medical education conference categories. AAMC annual meetings highlight the best programs of the association's member medical schools, teaching hospitals and academic societies; the 2000 conference focused on the many ways members are "Making a Difference" in the classroom, laboratory, clinic and community. "By all accounts, the breadth and diversity of the UMMS representation truly reflects the quality and innovation of our projects and proposals," noted Michele Pugnaire, MD, vice dean for undergraduate medical education.

REPPERT HEADS NEW DEPARTMENT

Steven M. Reppert, MD, a leading expert in circadian rhythms, was appointed chair of the new academic Department of Neurobiology at UMMS. Dr. Reppert will also be invested as the Higgins Family Professor in Neuroscience, a newly endowed professorship funded through the Worcester Foundation for Biomedical Research. Reppert's research has led him to the identification of a key regulatory receptor for the brain chemical melatonin. His development of a mouse model for understanding how this regulatory receptor works has the potential for a range of basic science and clinical applications keyed to understanding how biological rhythms impact neurological development and health.

STEVEN M. REPPERT, MD

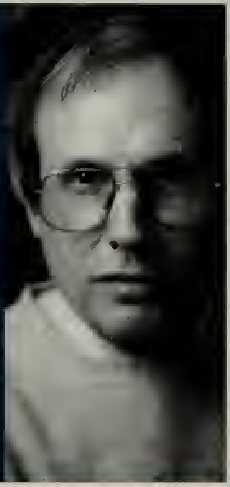
VICE DEAN FOR UNDERGRADUATE MEDICAL EDUCATION MICHELE P. PUGNAIRE, MD (THIRD FROM LEFT), CELEBRATES WITH EDUCATIONAL ACHIEVEMENT AWARD FACULTY RECIPIENTS BRIAN P. O'SULLIVAN, MD; RAJWANT MALHOTRA, MBBS; MICHAEL A. GODKIN, PHD; LAURIE A. DEMMER, MD; AND J. MARK MADISON, MD.

EDUCATORS AND STUDENTS HONORED

In April, the UMMS Educational Recognition Awards Ceremony celebrated faculty and students of the Graduate School of Biomedical Sciences, Graduate School of Nursing and School of Medicine. The event recognizes exceptional commitment to medical education and public service through faculty- and student-nominated awards, including the prestigious Lamar Soutter Award, GSBS Dean's Award and GSN Dean's Award. In its second year, the awards ceremony included two new honors. Recipients of the first Community Faculty Educator Awards were Annie Abraham, MD, assistant professor of medicine, who practices at the Fallon Clinic; Jason Matthew Kittler, PhD, MD, assistant professor of medicine, who practices at Neighborhood Health Center in Pittsfield; and Pierre Andre Rouzier, MD, assistant professor of family medicine & community health, who practices at University Health Services at UMass Amherst. The first Student Body Committee Resident Teaching Awards were given to Timothy E. Gibson, MD; Salleem M. Islam, MD; Joshua M. Krasnow, MD; Nicole J. Moss, MD; Yuri Novitsky, MD; and Amber L. Randall, MD. Recipients of the Dean's awards were Richard H. Glew, MD, and Emil R. Smith, PhD (Lamar Soutter); Reid Gilmore, PhD (GSBS); and Susan M. Bauer, DNSc, RN (GSN). Chancellor and Dean Aaron Lazare concluded his remarks at the ceremony by lauding both faculty and students for their efforts in making education at the Medical School a continuing source of great pride.

FUNDING FOR CANCER STUDIES INCREASED

Based on the successes of UMass investigators previously supported, the American Cancer Society doubled its funding of a three-year institutional research grant for junior faculty pursuing new areas of inquiry. The $300,000 award supports activities at the Worcester and Amherst campuses of the University of Massachusetts, including outcomes research and studies in the prevention and control of cancer and psychosocial aspects of cancer, areas in which early or "seed" funding is difficult to obtain. In past years, many researchers have received large, extramural grants as a direct result of their innovative work using American Cancer Society seed money. "One of the beneficial aspects of this funding is our ability to give researchers and clinicians an opportunity to expand their research horizons," said Gary S. Stein, PhD, the Gerald L. Haidak, MD, and Zelda S. Haidak Distinguished Professor and chair of Cell Biology and deputy director of research at the UMass Cancer Center.



GARY S. STEIN, PHD

C. ROBERT MATTHEWS, PHD

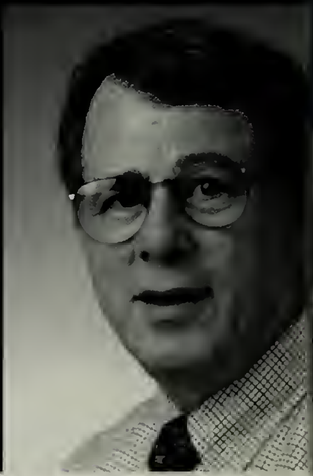
MATTHEWS SELECTED TO CHAIR BIOCHEMISTRY & MOLECULAR PHARMACOLOGY

One of the nation's pre-eminent chemical biologists, C. Robert Matthews, PhD, was appointed chair of the Department of Biochemistry & Molecular Pharmacology. The new, cross-disciplinary research and teaching unit combines faculty from the former departments of biochemistry & molecular biology and pharmacology & molecular toxicology; its more than 30 researchers work in the new and growing fields of chemical biology and protein engineering, focusing on structural biology, gene function and expression, X-ray crystallography, signal transduction, synthetic chemistry and drug design. Dr. Matthews, whose investigations center on how single amino acids affect protein conformation—an area of great potential for drug discovery and design—is the principal investigator for a range of research projects funded through the National Institutes of Health and National Science Foundation. He also is the associate editor of the *Journal of Molecular Biology* and serves on the editorial boards of the *Journal of Protein Engineering* and the *Biophysical Journal*. A graduate of the University of Minnesota and Stanford University, Matthews comes to the Medical School from Pennsylvania State University, where he was the Eberly Family Professor in Biotechnology.

STOFF ELECTED TO NATIONAL BOARD

Jeffrey S. Stoff, MD, UMMS professor of medicine and physiology and director of renal transplantation medicine at UMass Memorial, was elected to represent the New England region on the board of directors of the United Network for Organ Sharing. Under contract with the Health Resource and Service Administration of the U. S. Department of Health and Human Services, the United Network for Organ Sharing maintains the United States' organ transplant waiting list and brings together medical professionals, transplant recipients and donor families to develop organ allocation policies. Dr. Stoff also is a member of the Medical Advisory Committee of the New England Organ Bank and recently received the Outstanding Medical Award of the National Kidney Foundation's Gift of Life Awards.

JEFFREY S. STOFF, MD



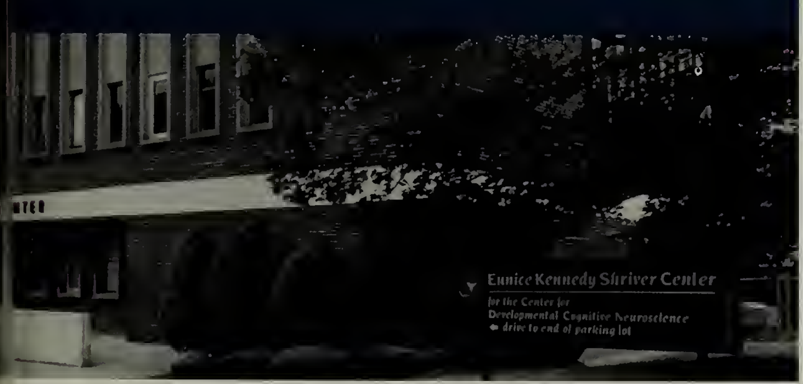
TOBACCO RESEARCH DIRECTED AT POLICY

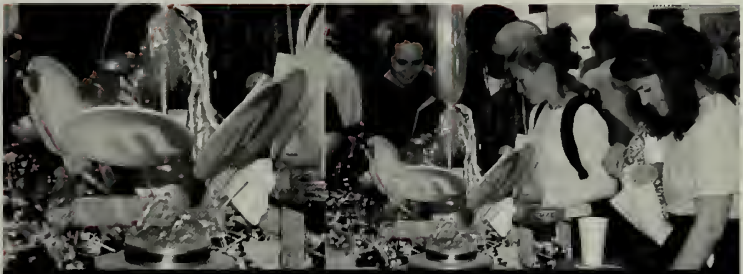
The research of UMMS scientists studying the effects of nicotine addiction and treatment and tobacco control policies garnered international publicity and selective funding. Joseph R. DiFranza, MD, professor of family medicine & community health, published two studies in September on the use of tobacco by minors, one revealing that adolescent smokers can become addicted even before they have established a daily smoking habit, and another citing the lack of enforcement in the majority of states of laws prohibiting the sale of tobacco to children. In a new project under Principal Investigator Judith K. Ockene, PhD, professor of medicine and director of the UMMS Division of Preventive and Behavioral Medicine, researchers will describe and analyze the development and evolution of the state policy created to implement a first-in-the-nation tobacco treatment program: the placement of certified tobacco treatment specialists in 85 community-based health care settings across the commonwealth. The Medical School received the highest score of the 10 organizations selected for the four-year, $3.4 million National Cancer Institute initiative, which may help other states implement similar treatment programs.

JUDITH K. OCKENE, PHD + JOSEPH R. DIFRANZA, MD

SHRIVER CENTER MERGES WITH UMMS

One of the first Mental Retardation and Developmental Disabilities Research Centers in the country, the Eunice Kennedy Shriver Center for Mental Retardation in Waltham merged operations with UMMS in the spring. Scientists at the center conduct basic research to determine the biological and environmental factors that influence neurological and behavioral development, while educators and teachers provide education and service programs that directly benefit individuals with mental retardation and other developmental disabilities and their families. The Shriver Center and the Medical School already held a common commitment to public service; with the merger, the institutions also share their research facilities, information technology, and financial, administrative and intellectual resources.


Eunice Kennedy Shriver Center
for the Center for
Developmental Cognitive Neuroscience
drive to end of parking lot



UMMS EMPLOYEES RECEIVE THANKS

The Medical School fulfills its mission to serve the commonwealth through excellence in health sciences education, research and public service by the efforts of its more than 3,000 employees. In recognition of their value to the institution, UMMS designated September "Employee Appreciation Month" and held celebrations ranging from an awards dinner at the JFK Library in Boston for employees who reached milestone years of service to old-fashioned festivities with food and music on each of the Medical School campuses. The popular salute, which earned its own appreciation from enthusiastic participants, was organized by the interdepartmental Employee Appreciation Team.

Facts + Figures

FY'00 FUNDING AND REVENUE

State appropriation to schools	$ 36.3 million
State contracts*	21.9 million
Research (sponsored activity)	98.9 million
Other revenue sources**	158.5 million
Total	**$ 315.6 million**

FY'01 PROJECTED FUNDING AND REVENUE

State appropriation to schools	$ 36.9 million
State contracts*	21.6 million
Research (sponsored activity)	113.0 million
Other revenue sources**	139.5 million
Total	**$ 311.0 million**

RESEARCH FUNDING : LAST FIVE YEARS

+ 1996	**$67 million**
+ 1997	**$74 million**
+ 1998	**$89 million**
+ 1999	**$93 million**
+ 2000	**$98.9 million**

**Support public service activity, including provision of mental health and pediatric services for those who cannot afford private care.*

***Examples are continuing education and student fees, biologic labs and newborn screening programs and other non-state revenue sources.*

COMMERCIAL VENTURES AND INTELLECTUAL PROPERTY

fiscal year	1995	1996	1997	1998	1999	2000
Invention disclosures	31	39	56	43	49	**101**
U.S. patent applications	20	18	28	30	24	**60**
Licensing agreements	3	5	5	14	17	**21**
Gross revenues	214	682	644	1,913	3,925	**7,418**
Sponsored research agreements	1,100	1,965	3,397	2,494	3,349	**1,669**

($ in thousands)

UMMS + ZYCOS

Thanks to an agreement between UMMS and Zycos, Inc., the discovery of a unique cancer-related protein can be translated into therapeutic and diagnostic treatments for a broad array of cancers. Under the terms of the licensing agreement, Zycos, Inc., a privately held drug development company, has exclusive rights to applications of the protein P450 CYP1B1 for specific fields of use. This protein, discovered by UMMS researchers, is expressed in nearly every type of human cancer and is not found in normal tissue.

"Zycos possesses several powerful DNA-based technologies that enable us to turn interesting genes into drug candidates by using an economical 'plug and play' approach," explained Mark Philip, president and CEO of Zycos. Philip expects to have drugs based on the protein to be tested in human clinical trials in little over a year's time.

EDUCATION

NUMBER OF FACULTY

Full-time	**676**
Part-time	**70**

SCHOOL OF MEDICINE

MD students	**407**
MD/PhD students	**19**
Alumni	**2,325**
Residents & fellows in UMMS programs	**526**

GRADUATE SCHOOL OF BIOMEDICAL SCIENCES

PhD students	**173**
MD/PhD students	**18**
PhD (Biomedical Engineering/ Medical Physics *a joint program with WPI)*	**4**
Alumni	**173**

GRADUATE SCHOOL OF NURSING

MS students	**41**
Post master's students	**5**
PhD students	**6**
Part-time students	**26**
Alumni	**438**

Continuing Medical Education Certificates	**17,500**
Allied Health Program students	**419**

Belarussian and Ukrainian physicians were trained in 2000 by UMMS emergency medicine staff.

Pictured, from left to right, back row to front are: Oleg Mazurenko, MD, of Ukraine; UMMS' Gregory Ciottone, MD; Drs. Sergei Gratchev, Andrei Soukovctykh, Igor Fomin, and Oleg Satsishur of Belarus; UMMS' Philip Anderson, MD; and Drs. Rosa Vilko and Galina Smirnova of Belarus.

DIVISION FORMED TO MEET INTERNATIONAL NEEDS

The UMMS Division of International Disaster and Emergency Medicine was established in 2000 in response to the growing international need for physicians trained in the field of emergency and disaster medical disciplines. Working together with the American International Health Alliance and the United States Agency for International Development, the division has established a string of emergency and disaster training centers in countries throughout the former Soviet Union, including Armenia, Estonia, Georgia, Belarus and Russia.

"As we implement our training centers and instruct host faculty, we never impose the 'American way' of thinking on them. Instead, we offer our experiences in the field, which they mold into something that will work in their country," explained Gregory Ciottone, MD, FACEP, assistant professor of emergency medicine and head of the new division. Sergei Gratchev, MD, director of the anesthesiology department at Minsk City Emergency Hospital agreed. "We will take the best from both our systems through collaboration."

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The Year in Philanthropy

UMASSMEMORIAL FOUNDATION
UMassMemorial HEALTH CARE
University of Massachusetts MEDICAL SCHOOL

UMMF ADVOCATES FOR EFFECTIVE OUTCOMES

Success for research, medical education and health care programs is measured in outcomes. With the help of thousands of people ranging from corporate CEOs to boy scouts participating in the Walk to Cure Cancer, the UMass Memorial Foundation advocates for the best faculty, physicians, researchers, technology and infrastructure which, in turn, can produce the best outcomes for patients.

Created through the 1998 merger of the UMass Medical Center's clinical system and Memorial Health Care, the UMass Memorial Foundation combined the resources of the two institutions to create a collaborative approach toward institutional development. In 2000, the Foundation raised $22 million and picked up the momentum needed to launch its effort to position UMass Medical School as one of the nation's premier research institutions and UMass Memorial as a leader in quality patient care.

To attract the best, UMMS recognizes that it must offer both the tools needed to stay on the cutting edge of research and the institutional support that enables scientists to focus on their work. Providing this infrastructure for achievement is the goal of the Foundation's largest ongoing effort, the Campaign for Research.

The Campaign for Research is quickly moving toward surpassing its goal of $38 million dollars, which will support the construction and outfitting of the 360,000-square-foot research laboratory building on the UMMS campus and the recruitment of more than 100 new research faculty. The 10-story facility, with its 200,000 net square feet of laboratory space, is already proving to be a magnet for some of the nation's top researchers. The research building is scheduled to open in the fall of 2001.

In addition to the Campaign for Research, the Foundation has assisted UMass Memorial in its efforts to improve its physical capabilities to provide quality care:

A campaign drive is underway to raise more than $1.7 million for the support of an ambulatory surgical center at the Hahnemann Center on Lincoln Street in Worcester.

The expansion of the cardiac catheterization labs at the University campus will double capacity and enable the facility to meet its ever-growing demand. The campaign goal is $2 million.

A $1 million campaign is underway that will fund the expansion of the Ambulatory Cancer Center at the Memorial campus.

UMass Memorial is also lending support to its affiliated community hospitals to improve the quality of services they provide. In particular, UMass Memorial—Marlborough Hospital is looking to raise $1 million for its newly completed emergency room; Clinton Hospital is entering a second phase of a campaign to improve emergency room and outpatient services; and HealthAlliance, which services the Fitchburg/Leominster area, is in the midst of a $6 million capital drive to build a cancer center at its Burbank campus.

In November 2000, Worcester attorney R. Norman Peters was appointed chairman of the UMass Memorial Foundation, charged with piloting the ambitious development programs aimed at supporting research and education at UMass Medical School and the high quality clinical programs of UMass Memorial Health Care. That means investments in bricks and mortar as well as in the best and the brightest, who will bring knowledge, skill and compassion to these institutions and the community as a whole. +

THE BRUDNICK NEUROPSYCHIATRIC RESEARCH INSTITUT

IRVING S. AND BETTY BRUDNICK INSTITUTE OPENS

Named for the Weston donors whose gift of $2.5 million helped fund its construction, the Irving S. and Betty Brudnick Neuropsychiatric Research Institute opened on May 1 with a public symposium and dedication ceremony. The 32,000 square foot, state-of-the-art research building is located on the grounds of Worcester State Hospital, one of the nation's oldest public psychiatric facilities. Operated by the

THE CAMPAIGN FOR RESEARCH

JACK BLAIS (LEFT) WITH HIS WIFE, SHELLEY, CHANCELLOR AND DEAN AARON LAZARE AND ANNA PIERCE (SEATED)

SARAH ADAMS

TIMOTHY WANG, MD

BLAIS GENEROSITY SETS EXAMPLE WITH $3 MILLION GIFT

The day after Thanksgiving, retired Framingham businessman and entrepreneur Jack Blais was busy drawing up lists. But he wasn't thinking about holiday shopping; he was taking an engineer's approach to outfitting state-of-the-art laboratories that he's confident will find the key that will lead to a cure for pediatric cancer.

"Innovation takes funding," said Blais, and he wants to ensure that UMMS researchers and scientists aren't stymied by a lack of top-notch equipment and research facilities. So he's culling through his Rolodex of friends and associates to identify potential donors who will join him to raise $5 million needed to construct and outfit the pediatric cancer research facilities that will occupy space in the new research laboratory building, and recruit researchers to the laboratory of Peter E. Newburger, MD, professor of pediatrics and molecular genetics & microbiology.

It was the courageous story of Ali and John Pierce of Princeton that originally drew Jack and Shelley Blais to the research building project. Ali, a high school freshman, succumbed to cancer in 1996; her father died of a heart attack less than a year later while training for a marathon he was planning to run in her memory.

A meeting was set up between the Blaises and Ali's mother Anna, who was championing the UMMS research program. "That really struck a chord for us," said Blais, who drew up a check for $1 million on the spot to jumpstart the project. "It will fulfill my dreams here on earth to help find a cure." Within a month, as part of his effort to identify potential donors to the project, Blais decided to pledge an additional $2 million. "We will get this done," he predicted. "I just want it to happen in my lifetime."

Blais is a mechanical engineer by training, who built his fortune through turning concepts into reality. By putting the proper tools in the hands of the right people, a cure will be found for pediatric cancer. Of that, Blais is certain. +

IRVING S. AND BETTY BRUDNICK

Medical School and directed by internationally renowned neuroscientist and geneticist Edward Ginns, MD, PhD, the institute is devoted entirely to biological research into the causes, diagnoses and treatment of chronic and serious mental disorders.

"As one of only a handful of facilities in the country devoted to studying the biological causes of mental illness, the Brudnick Institute will have a major impact on mental health research and care. It will bolster the Medical School's growing reputation for research and will attract more exceptional scientists to Central Massachusetts," said Chancellor and Dean Aaron Lazare at the ceremony.

ADAMS CHAIR IS FITTING TRIBUTE TO PHYSICIAN

Lambi Adams, MD, didn't view the treatment of disease as the goal of medicine. It was the discovery of the cures to eradicate disease completely that fueled his career, according to his wife Sarah Adams.

To her, the endowment of the Lambi and Sarah Adams Chair in Genetic Research was a fitting way to honor her husband and preserve the legacy of a man who practiced medicine for 50 years, right up to his death in 1993.

"He was a man ahead of his time," said Adams. "He was always looking ahead for new ways to cure disease."

Lambi Adams of Massachusetts, and Sarah McNitt of Pennsylvania, first crossed paths in Philadelphia where both were students, he at Hahnemann Medical School and she at Peirce College.

Their relationship lasted through World War II when Sarah Adams worked in Philadelphia as a bookkeeper and Lambi Adams joined the service, touching European soil first at Omaha Beach during the D-Day invasion. In 1951, they married and began their life-long partnership with the City of Worcester and its medical community.

The genetic research conducted at UMMS opened Sarah Adams' eyes to the new possibilites of medicine. "This research can secure information that will help eradicate devastating diseases," she explained. "Through this research, we can find cures, just as my husband dreamed." +

WANG'S RESEARCH GOALS AND PROMISE IN LINE WITH UMMS

UMass Medical School used the right kind of enticements to lure Timothy Wang, MD, away from his associate division chief's position at the Harvard-affiliated Massachusetts General Hospital: the spacious, state-of-the-art research laboratory building nearing completion on campus and the highly regarded Robert Finberg, MD, UMMS chair of medicine, who contacted Dr. Wang as part of his mission to populate the building with the best and the brightest that the world of research has to offer.

Wang, with his thick *curriculum vitae* and rapidly growing national reputation, was an early and obvious target. His research into the hormone gastrin and its role in the development of stomach and colon cancer complements the studies of the other exemplary scientists already present here or on their way. And, the more Wang found out about UMMS, the more he liked it. He was impressed with the institution, its leadership, its goals and its promise.

The promise of Wang's research is equally impressive. His laboratory has shown that longer, less processed forms of gastrin are important growth factors that contribute to the progression of colon cancer in the mouse. Conversely, the shorter, processed forms of gastrin interact with a bacteria, *Helicobacter pylori*, and specific inflammatory molecules to accelerate the development of stomach cancer in the mouse.

Wang holds the titles of professor of medicine, chief of the Division of Gastroenterology at UMass Memorial and will be invested in June as the Gladys Smith Martin Chair in Gastrointestinal Cancer. With the completion of the new research laboratory building, he plans to double the number of gastroenterology researchers over the next five years. With the approval of a new endoscopy unit and clinic space, Wang also expects to expand the number of clinicians and clinical researchers in the division. "UMass has supported its commitment to research with funds for both staff and facilities," he said. "This factor differentiates it from some of its older brethren in Boston and positions the institution to become a top research facility.

"At this juncture in history, if one has the education, training and resources, it is difficult not to be drawn into the field of biomedical research," Wang added. "The questions are so interesting; the technology available is so powerful. I am constantly amazed that one can draw a salary for an activity that's so stimulating and rewarding." +

PLAN A GIFT

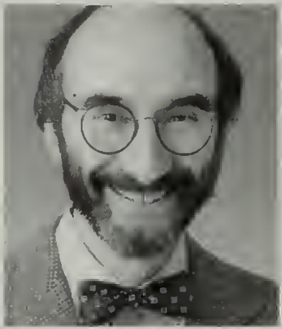
Gifts, bequests and trusts are important sources of support for the University of Massachusetts Medical School and UMass Memorial Health Care. Such gifts provide funding for a wide range of programs, including those that expand treatment options for patients, increase the scope of pioneering biomedical research, and strengthen educational programs for doctors, nurses and scientists.

Gifts can be made in cash, securities or other property and can take many forms: outright gifts, pledges, bequests or various life income arrangements. Contributors may designate their gifts to be used for specific purposes or make unrestricted gifts providing greater flexibility for planning and administering programs in patient care, education and research.

Providing for the Medical School or UMass Memorial Health Care in your estate plan is a significant statement

THE CAMPAIGN FOR RESEARCH

BRUCE D. MINSKY, MD



STEPHEN R. GORFINE, MD

ALUMNI HELP CHART COURSE FOR MEDICAL SCHOOL'S FUTURE

Bruce D. Minsky, MD, and Stephen R. Gorfine, MD, are proud of the education they received at UMass Medical School. So, when approached to be alumni members of the steering committee for the Campaign for Research, they didn't hesitate before saying "yes."

There's no question that both Drs. Minsky and Gorfine want to help UMMS develop a nationally recognized research program that will strengthen its reputation and its ability to bring new treatments and cures to patients. The new research laboratory building will bring with it prestige as well as the ability to develop programs that take therapies identified in the laboratory and translate them into clinical applications. That's the wave of the future, said Minsky, and he sees UMMS well-positioned to catch it.

Minsky and Gorfine share an equally important agenda as steering committee members: increasing alumni commitment to the institution that provided them with their medical degree and started them on their career path.

Now vice chairman of Radiation Oncology at the Memorial Sloan-Kettering Cancer Center in New York and professor of radiation oncology at Cornell University, Minsky has not forgotten his roots. "I have fond memories and feel indebted to UMass for the educational opportunities it provided," Minsky said. "Philanthropy is a way you can repay the institution."

Alumni loyalty and commitment is crucial to the Medical School, stressed Minsky, who graduated in 1982. Not only does alumni allegiance build endowments, it provides a base of institutional boosters that affirms the School's credibility and reputation.

As far as the new research laboratory building goes, Minsky and Gorfine believe that UMMS has done what is needed to put together a top research program, providing building space, labs and the funding to attract researchers. The institution and the program are both in growth mode, they said, which means that a person can play a real role in charting the course for the future of the institution.

Minsky feels that opportunity, in itself, is very appealing, and will attract the same type of creative minds that would leave a large, established company for a start-up. "Innovative people like innovative environments," he said.

Gorfine, associate professor of surgery and associate attending surgeon at Mount Sinai Medical Center in New York City and a 1978 graduate of UMMS, agrees that the results of the campaign will be greater than the dollars brought in; the research that will be conducted in the facility will enable UMMS to continue its foray into the big leagues, expanding its reputation and giving an additional boost to its credibility as an academic research institution.

about your commitment to the health and wellbeing of future generations. We are pleased to provide the following sample bequest language:

"I give, devise and bequeath to the UMass Memorial Foundation, a non-profit organization located in Worcester, Massachusetts, the sum of $_____ [or description of property] to be used for its general purposes [or a specific purpose]."

The Foundation provides informotion obout specific progroms ond activities, and stoff is ovailable to consult with benefoctors ond their advisors obout various gift ideas. For further information, please contoct:

Kevin G. Courtney, Associate Vice Choncellor for Development

University of Massachusetts Medical School

Four Biotech, 377 Plantation Street

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BOB PALADINO (SECOND FROM RIGHT, SECOND ROW) WITH SCOUTS FROM TROOP 175 AND SENATOR EDWARD KENNEDY AT THE SECOND ANNUAL WALK TO CURE CANCER, LABOR DAY 2000

'INSPIRING' VOLUNTEERS CONTRIBUTE TO WALK'S SUCCESS

The involvement of alumni is critical to the Medical School's credibility, Gorfine said. "Alumni are important in terms of the status of an institution. Their successes enhance its reputation, helping to recruit new faculty and students."

Then, of course, there is the expanding role alumni play in providing the resources needed to educate new generations of physicians. In addition, fierce competition for federal dollars for research always looms, and cost-conscious health care systems are becoming increasingly watchful of their wallets. As Gorfine explained, "Medical schools must look to a variety of sources for research funding."

Gorfine wants to do his part to ensure the institution gets the financial support it needs. It's part of repaying the debt he feels to UMMS for instilling in him a unique set of values, and part recognition of the importance of research to the future of the institution.

"I want to see continued success." +

The second annual Walk to Cure Cancer left Robert J. Haynes humbled. That's saying a lot for a man who leads the 400,000-member-strong Massachusetts AFL-CIO as president, and who, along with Dottie Manning, co-founder of the Our Danny Cancer Fund, spearheads the Walk to Cure Cancer's goal of raising $5 million for UMass Cancer Center facilities in the new research laboratory building.

"It's inspiring to work with people who are fighting and giving of themselves," said Haynes, ticking off the range of people who spent their Labor Day participating in the walk: cancer survivors and scores of labor union members, walked shoulder to shoulder with volunteers, including members of the survivors' families, college fraternities, scout troops, and businesses small and large. The volunteer contingent is proving pivotal to the success of the walk.

This year, an estimated 6,000 people walked the five-mile course raising over $500,000, nearly doubling the $300,000 raised in 1999, the walk's inaugural year. (It took 82 hours for the UMMS business office to prepare the deposit of funds collected by walk participants, the majority of which were tallied on the day of the event.)

Since the walk's inception, participation has grown dramatically, with volunteers giving their all to the event. "The volunteers couldn't do enough," said Coordinator Cathleen Quagliozzi. "They were upbeat and positive."

Bob Paladino was one such volunteer, though adversity would soon impact his life. In the month following the walk, Paladino lost his wife Andrea to breast cancer. The UMass Memorial employee, dedicated to finding a cure for cancer, helped organize the volunteer participation of Mohegan Council Boy Scout Troop 175. Members of the troop set up equipment and materials before and after the walk, in addition to raising $2,200. "The troop knew my wife and were inspired to take part because of her struggle. When their work was done, their contributions made them feel great about themselves," said Paladino."We'll keep coming back to volunteer and walk, because we want to raise funds for a cure and support the physicians, nurses and staff of the UMass Cancer Center, who were like an extended family for my wife." +

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* *Nobel laureate*

When the News Isn't Good

LAURIE A. DEMMER, MD, COUNSELS A "PATIENT" DURING ROLE-PLAYING EXERCISES WITH STUDENTS.

BY LAURIE A. DEMMER, MD, ASSISTANT PROFESSOR OF PEDIATRICS AT UMASS MEDICAL SCHOOL AND
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I recently had a potentially life-altering conversation with a young woman. The brave new world of genetic testing was impacting her life, and she had an important decision to make. A genetic test could reveal the risk of her passing a neurological disorder—for which there is no current treatment or cure—to her children. Should she proceed with the testing and then brace herself for the results?

Her mind raced as she took in this powerful information; starting a family was always a plan she looked upon with excitement. Now, uncertainty, mixed with dread, clouded her thinking.

Speaking with her for over an hour, a UMMS medical student by my side, we discussed the implications for her of a positive test result. Stepping back a moment, if the test was positive for the disorder, how would we break the bad news to her and her family?

Delivering bad news is never easy for obvious reasons, yet for physicians, breaking bad news is especially vexing, undoubtedly the most difficult job we face. At the moment when effective communication skills are most important, it seems we become speechless when bad news lies on our tongues. This is because we want to make our patients better, the core of doctoring. Having to deliver bad news signifies that they may not get better, indeed, they may suffer chronically, or even die. In those cases where bad news must be delivered, it must be delivered correctly, or the patient/physician relationship becomes damaged—just when it must be its strongest.

I developed and teach a course, new to the Medical School this year, which instructs students in methods to break bad news to patients that are both empathetic and effective. It is one of eight innovative new courses implemented in 2000 through the Macy Initiative in Health Communication, a four-year program designed to strengthen the communication skills of physicians through the development of competency-based curricula for medical students. UMass Medical School was selected as one of three U.S. medical schools to participate in the initiative, funded by the Josiah Macy Jr. Foundation, beginning in 1999.

Through lectures and discussion, videotapes, standardized patient interviews and role playing in both ob/gyn and pediatric clerkships, third-year UMMS students learn the keys to patient/physician communication. These include optimizing comfort and privacy; minimizing interruptions; allowing patients to express themselves; acknowledging patients' concerns and emotions; calibrating language and vocabulary to that of the patient; and encouraging questions.

Sometimes the most effective means to drive home these concepts for students is through their experience of seeing how it should *not* be done. In the obstetrical session, students watch a videotape in which a patient has a screening test to determine the risk of Down Syndrome in her unborn child. The physician has an increased suspicion of Down Syndrome based on the test results. She enters the exam room to deliver the bad news, while the patient remains gowned and seated on the exam table. Using "doctor babble" to explain the results, the physician stands, not making eye contact. The patient's anxiety is on the rise. She becomes defensive, possibly because she's experiencing normal feelings of guilt. Her innocent child may suffer from a severe birth defect; what could she have done differently? As the physician herself becomes defensive, the situation deteriorates, and the physician abruptly leaves the exam room. The patient/physician relationship is damaged, possibly irrevocably.

Thankfully, the videotape continues with the right way to deliver bad news. In this version, the physician enters the exam room and asks the patient to dress and join her in her office. There, without risk of distraction, the physician looks into the patient's eyes and explains the test results in terms the patient understands. She stops at appropriate times to let the news sink in. She asks for questions and acknowledges the patient's anger, distress and guilt. She ends the discussion on the patient's terms and encourages the patient to contact her again. She builds trust and therefore, an effective patient/physician relationship.

In class, we also discuss the potential fall-out from the delivery of bad news. Students will need to come to grips with the fact that delivering bad news may lead to questions they can't answer, that no one in medicine can currently answer.

And they will undoubtedly find themselves in a situation like the one I recently faced, counseling the young woman. There is perhaps nothing that will ever make moments like this less stormy for the physician. But we can take to heart the techniques we've developed in the Medical School's course on delivering bad news, helping physicians and their patients create relationships that can weather the storm. +

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